(54) Title: MESSAGING SERVICE SYSTEM AND METHOD TO BE PERFORMED IN SUCH A SYSTEM
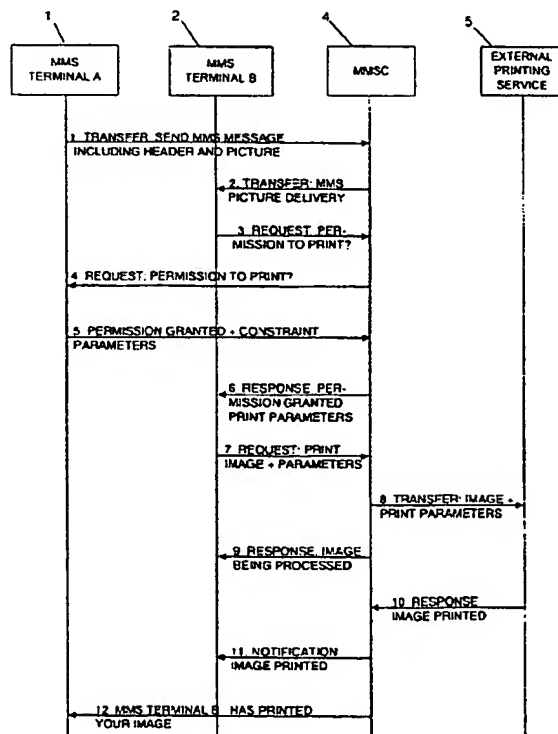
(57) Abstract: The invention relates to a method and a Messaging Service system which includes one or more Messaging Service terminals (1, 2) and a control means (4) being adapted for communication with a printing means. The Messaging Service terminal is adapted to send a message to the control means, which message contains a print-related information section and a message content section representing the message content. The print-related information section contains print-related information and designates the delivery of the message content section to the printing means (5) or to a second Messaging Service terminal (3). The system is preferably implemented as a Multimedia Messaging Service (MMS) system. The message content section may represent one or more images. The print-related information section is preferably contained in a header of the message, and may contain authorization information related to printing or copying rights for printing or copying the message content, preferably the image or images represented by the message content section, by the second Messaging Service terminal.

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MESSAGING SERVICE SYSTEM AND METHOD TO BE PERFORMED

5   IN SUCH A SYSTEM

FIELD OF THE INVENTION

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The invention relates to a messaging service system,
preferably a Multimedia Messaging Service (MMS) system in
which messages can be transmitted which contain an

15   information section and a message content section such as an
image section. Such a MMS system is suitable for transmitting
information of multimedia type such as images (e.g.
photographs), audio information and also pure text or graphic
information. The invention furthermore relates to a method

20   for transmitting messages containing an information section
and a message content section, e.g. an image data section.

BACKGROUND OF THE INVENTION

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Messaging services are frequently used for swiftly sending
messages e.g. between mobile phones. As an example, SMS
(Short Message System) messages can be sent from one user
equipment such as a mobile station (for instance mobile

30   phone) to another user equipment which may be a mobile or
stationary network component.

MMS (Multimedia Messaging Service) provides an advanced
messaging service which is able to send multimedia-type

35   information such as images, audio data or the like from one
equipment to another equipment. The multimedia messaging

service (MMS) is a system application which allows a WAP
(Wireless Application Protocol) client to provide a messaging
operation with a variety of media types. The WAP defines a
specification for developing applications operating over

5   wireless communication networks. A user may therefore send
multimedia messages over a WAP equipment such as a mobile
terminal. Such messages can then be displayed on a display of
the receiving equipment, e.g. a mobile terminal. Although
this type of messaging service is beneficial in that it

10   allows the sending of a variety of different types of data,
it nevertheless is subject to some restrictions regarding
usability.

15   SUMMARY OF THE INVENTION

The invention is providing a system and/or an improved
functionality of a messaging service.

20   According to one aspect of the invention, a Messaging Service
system is provided which includes at least one first
Messaging Service terminal and a control means being adapted
for communication with a printing station, the first
Messaging Service terminal being adapted to send an image

25   message to the control means, the message containing a print-
related information section and a message content section
representing the message content, wherein the print-related
information section contains print-related information and
designates the delivery of the message content section to the

30   printing station or to a second Messaging Service terminal.

Furthermore, the invention provides, according to another
aspect, a method to be performed in a Messaging System, in
particular a Multimedia Messaging Service (MMS) system,

35   including at least one first Messaging Service terminal and a

control means being adapted for communication with a printing station, the first terminal sending a message to the control means, wherein the message contains a print-related information section and a message content section

5   representing the message content, preferably one or more images, the print-related information section containing print-related information and designating the delivery of the message content to the printing station or to a second Messaging Service terminal.

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Some preferred implementation details of the invention are defined in the dependent claims.

The present invention provides a messaging service wherein

15   the messages contain print-related information section. The print-related information preferably indicates whether printing of the message contents such as one or more images is allowed or prohibited. The print-related information may also indicate print restrictions such as maximum number of

20   allowed prints of the message. The print-related information may also indicate a desired printing of the message content requested by the sending terminal. This print-related information section provides an additional functionality to the messaging service in that it allows, restricts or

25   inhibits a printing of the message contents.

Such an additional functionality is in particular of advantage in a multimedia messaging service (MMS) which is adapted to send images such as graphic pictures or

30   photographs in addition to other information such as pure text information. However, the invention may also be implemented in a messaging service of other type such as SMS (Short Message Service), or USSD (Unstructured Supplementary Service Data) messages.

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A system or a method in accordance with the invention allows
a user to deliver and print e.g. images such as photographs
preferably taken by using a digital camera, the images being
printable on a suitable hard copy output device. Such a hard
5   copy output device e.g. includes printers of any type such as
a personal photo quality color printer, an internal company
printer connected via e.g. an Ethernet LAN (Local Area
Network); or a user-specified developing and printing
service.

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The images may be taken using any kind of imaging, preferably
digital imaging. The image capturing device can be a MMS
terminal, a digital camera or any other suitable type of
imaging device. Image processing such as filtering, reduction
15   and/or interpolation of the image may be performed before
printing the image. The printing services used for printing
the image can be a traditional or digital print processing
house. The printed images may be transferred from or to the
print ordering station by any suitable method such as
20   wireless data transfer or galvanic transport.

As an example, a MMS user may have taken a picture using a
multimedia terminal, and transferred the image to a MMS
center (MMSC) which serves as control means or server of the
25   MMS system. Via this MMSC, the image is delivered to the
recipient specified by the sender. When the recipient wants
to print the received image, she/he may e.g. order a print
from the originating user which can either explicitly give
permission for printing one or more pictures sent. to the
30   MMSC, or may initially mark any sent image as being
acceptable or prohibited to print. The recipient can then
request a local or remote printing of the desired image.

The messaging service is thus extended to convey printing
35   information, or other authorization data which preferably are

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included in the same message as the picture sent to the
recipient. Images can therefore be marked or tagged for
print. As an alternative, the image originator which will
usually be the copyright holder, and the recipient can
5   perform a negotiation before effecting any print of a
transmitted image. According to the invention, the method of
output, e.g. on a local printer or an external print service,
can also be designated.

10   Images can be transmitted to a printer based on user-supplied
profile data or direct indication of a printer address.

According to the present invention, manual steps for ordering
the printing of images can be eliminated. The invention
15   provides a solution preferably for multimedia terminals able
to capture images, and to send images directly to a printer
system for printing (e.g. either to a local printer or to an
external printing service).

20   In accordance with one of the aspects of the invention, the
originating terminal (e.g. MMS terminal) can indicate, during
upload of the image, whether the image is to be stored in the
messaging service server for subsequent processing and/or
printing.
25

Furthermore, according to another aspect of the invention,
the printing information is preferably embedded inside a
messaging service message such as a MMS message. Possible
printing information may include: permission to view only,
30   permission to print once or several times up to a defined
upper limit; size of print; print quality; printer address;
payment method, etc.

The negotiation process performed between the originating and
35   receiving users (terminals) may lead to the embedding of the

negotiated and accepted printing parameters in the initial
image uploaded to the messaging service center, including
information relating to e.g. charging, constraints on
printing, routing information indicating the requested
5   printer, etc. In such a case, the negotiation process may be
performed before actually transmitting a picture to the
receiving terminal.

According to the invention, a print-specific payload may be
10 included in any operation or message to/from a user equipment
and the associated server. The payload, e.g. the print
header, may contain the address and parameters defining where
to output/send and print the message. This can be realized by
the addition of one or more print-related fields to the
15 message such as the MMS message. When a print is requested
after the message has already been delivered to the receiving
terminal, the MMS message may include a print field
indicating the state such as the print request, which message
is sent to the originating terminal. A print-request
20 primitive may be provided to indicate this request. Likewise,
a print-status response will be provided which indicates
"printing allowed/prohibited/restricted". When the print
rights are defined by the sending MMS terminal beforehand,
the message sent by the originating user contains a print
25 header which already contains all print right fields.

This concept may also be applied for printing messages of
other type such SMS messages which may then be redirected
directly to a printer such a local desktop printer, if
30 available.

In a preferred embodiment, a user may directly specify a
print service which is selected for printing the transmitted
image or images. The printer-specifying information is
35 relayed to the control means such as MMSC via a specific

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"print command" request. A response from the control means
may inform the user on the print authorization and conditions
such as the price for printing the image or images. This
information can be encapsulated and sent as a print order via
5   a messaging service such as MMS or e-mail.

When uploading an image to another terminal, the sending
terminal preferably indicates if the image is to be stored by
the control means for further processing and printing.
10

The invention provides enhanced print services in that print
information is embedded inside a messaging service message,
preferably a MMS (Multimedia Messaging Service) message.
Furthermore, such print-related information may also specify
15   that the control means is to store the complete message, or
at least the message content such as one or more images, even
after delivery to the recipient. Therefore, when the
recipient subsequently wishes to print the message, e.g. the
image, it is only necessary to inform the control means of
20   the printing request which thereupon performs the necessary
steps such as transmitting the image to a printing device or
service.

In accordance with a preferred aspect of the invention,
25   print-related information such as printing information,
printing/copyright/cost/printer address information or
information on from where, whom to get the printing
permission, is embedded inside the message such as MMS
message itself when the message is first sent.
30

The print-related information section is preferably contained
in a header of the message. Such header is usually provided
for indicating the addresses of the sender and recipient and
is therefore only to be extended so as to include information
35   field(s) for the print-related information. Hence, no

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additional message is to be sent for the print-related
information, and the existing messaging service can be used
without need of specifying new standards. Merely the
definition of the information section has to be specified so
5   as to provide one or more additional fields for the print-
related information.

The print-related information may contain authorization
information. The recipient and/or control means thus are
10   informed on the printing or copying rights related to the
transferred message content such as the image or images. When
the print-related information indicates inhibition to print,
general allowability, or printing only up to an upper limit
such as e.g. five prints of the original, no additional
15   signaling and message communication with the sender is
necessary. The recipient merely has to request, if printing
is allowed, a printing service, either directly or via the
control means, to make and deliver the intended prints.

20   Preferably, the control means is adapted to store the print-
related information such as authorization information and is
thus able to check it for print permission when the recipient
is requesting a print. This structure reduces the signaling
and messaging load of the network.
25
When the recipient desires to print the received message
content such as text, graphic or image such as a photograph,
and the print-related information indicates a necessary
communication with the sending terminal in order to clarify
30   print conditions, the control means informs the sending
terminal on the intended print, and receives therefrom data
specifying the print conditions or restrictions such as
maximum number of allowable prints, costs for printing the
image and the like. Hence, the sending terminal is, in this
35   case, not forced to specify all printing conditions in his

first message but may deliver or specify them only after receipt of a query indicating a desire to print the sent image.

5 Preferably, the control means comprises a memory for storing the message contents such as one or more images received from the first terminal and transmitted to the second terminal. When the second terminal is issuing a print command to the control means, it is unnecessary to transmit the image data

10 from the recipient terminal or sending terminal to the control means. This reduces the total amount of traffic occurring in the network.

The printing station may be an external printing station
15 which e.g. is specifically adapted for printing images such as color photographs with high quality.

The invention is furthermore characterized in that the network components such as the terminals and/or the control

20 means are adapted to perform the functions as defined above and in the following description. Therefore, the network components as such are likewise to be considered as representing independent implementations of the invention.

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    BRIEF DESCRIPTION OF THE DRAWINGS

    Figure 1 shows a basic concept of a MMS system;

30 Figure 2 illustrates an embodiment of a method and message flow according to the invention;

    Figure 3 shows another embodiment of a method and structure incorporating another type of message flow;

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Figure 4 illustrates another embodiment of the invention;

Figure 5 shows the basic structure of a message sent from a first terminal to a second terminal and/or a control means,
5   including a print request header;

Figure 6 shows details of the structure of the print request header of Figure 5;

10 Figure 7 illustrates a further embodiment of the invention in a simplified manner;

Figure 8 shows another embodiment of the invention in a schematic representation; and
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Figure 9 shows a further embodiment of a message flow according to the invention.

20 DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS OF THE INVENTION

Figure 1 shows a schematic representation of a network such as a communication network or a data network which is adapted
25 to perform a messaging service, in particular a MMS (Multimedia Messaging Service). In another embodiment (not shown), the system may be adapted to perform a messaging service of another type such as SMS or USSD. The system comprises several terminals 1 to 3 (terminals A, B, C) which
30 are implemented as MMS terminals able to send and/or receive messages of multimedia type. The system furthermore comprises one or more control means 4 which here is implemented as a MMS controller (MMSC) or MMS server.

The system furthermore comprises, or cooperates with, a printing service 5 which may be a local printer or an external printing service, for example.

5   Figure 2 shows details of a messaging method for sending and returning messages from a first user to a second user in a case where a recipient (second user) of an image requests a hardcopy (print) of the received image. According to Figure 2, the user of MMS terminal 1 (MMS terminal A) sends an MMS
10   message to MMS terminal 2 (terminal B) via the MMS server (MMSC 4).

Although the term "image" is used here, this term is to include pictures of any kind such as graphic representations,
15   sketches and the like. This image may be sent in or as the MMS message with MIME content type (MIME = Multipurpose Internet Mail Extension) such as e.g. JPEG image.

The steps and messages shown in Figure 2 will be described
20   below in detail referring to the numbering attached to the individual messages of Figure 2. In step 1., the MMS terminal 1 originating an image or picture, sends this image or picture to the MMS terminal 2 using the multimedia messaging service. The MMS message originated from terminal 1 includes
25   a header containing print-related information, and the picture data. This MMS message is first directed to the MMS server 4 which transfers, in step 2., the received message to the MMS terminal 2 based on the recipient address indicated in the MMS message. After viewing the received image, the
30   user of the MMS terminal 2 decides, in the present example, to print the image, if allowed, and therefore sends, in step 3., a request message to MMS server 4 inquiring on the permission to print.

In step 4., the request sent in step 3. is transferred, by
MMS server 4, to the originating MMS terminal 1 either in
unchanged manner or in translated form such as a text (or
other type such as special indication) message.

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MMS terminal 1 checks the requested permission to print and,
after deciding thereon, sends a response which, in the
present example, is the message shown in step 5., i.e. a
message "permission granted + constraint parameters". The

10   constraint parameters may e.g. represent limitations on the
maximum number of allowable prints, the size of prints, the
print resolution etc. If no constraints are provided, the
constraint parameters need not be sent or may by set to zero
or default value. This message sent to MMS server 4 in step

15   5. is transferred to the MMS terminal 2 as a response which
indicates "permission granted" and eventually may include
print parameters according to any constraint parameters, if
provided.

20   In step 7., the MMS terminal 2, after deciding on the print
parameters, if any, and the acceptance thereof, sends a
request message to the MMS server 4 requesting a print of the
image and eventually indicating additional parameters which
may define a printer to be used and/or user profile issues.

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The MMS server 4 selects an appropriate printer or printing
server and, in the case of Figure 2, sends a message to the
external printing service 5 transferring the image and print
parameters to the printing service 5 (step 8.). Furthermore,

30   in the step 9., the MMS server 4 sends a confirmation to MMS
terminal 2 stating that the image is being processed, i.e.
that printing is performed.

When the external printing service 5 has completed the
35   printing job, it sends a message to the MMS server 4 _

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confirming that the image has been printed (step 10.).
Thereafter, the MMS server 4 sends a notification (step 11.)
to the MMS terminal 2 informing it on the effected print, and
eventually additionally sends a message (step 12.) to the
5   originating MMS terminal 1 informing same on the print of the
image by MMS terminal 2.

In the notification sent in 11., the MMS server 4 may also
inform MMS terminal 2 on the location where the printed image
10   is waiting for being collected, in particular in a case when
several different printers are available for printing.

Figure 2 represents a case wherein the MMS terminal 1 grants
the print permission. If permission should not be granted,
15   the response (step 5.) of MMS terminal 1 to the print
permission request of steps 3. and 4. is "permission not
granted". This response is sent to MMS terminal 2 in step 6.
Thereafter, any eventual print requests of MMS terminal 2
will fail.
20

As an alternative, the constraint parameters sent in message
5. may allow a print only once. In this case, the user of MMS
terminal 2 is informed, in step 6., that permission to print
is given only once. Such restrictions are preferably stored
25   in MMS server 4. When the user of MMS terminal 2 requests
print of the picture received in step 2., such a print
request is served only once. Any subsequent print requests
are rejected by MMMS server 2.

30   Alternatively, the constraint parameters may also indicate an
upper limit of allowable number of prints such as five
prints. The MMS server 4 then sets a counter counting the
number of prints of the image requested by MMS terminal 2.
When the maximum allowable number is reached, all subsequent
35   printing requests are rejected. When the print permission

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should be given for multiple prints without any upper limit, the user of MMS terminal 2 is informed, in step 6., that the image can be printed as many times as desired.

5   The constraint parameters of message 5. may include additional or other parameters such as allowed printing resolution. This may in particular be of importance for professional images where print permission may be given for low resolution printing only, or for high quality
10 professional printing. Fees charged for these different printing possibilities may be negotiated or may be fixed and will depend on the decision of the user of MMS terminal 1 having the copyright of the image in question.

15 During the "request print" negotiation phase, the MMS terminal 1 may also state, in the message sent in step 5., price/charging information as one of the constraint parameters. Additionally, the MMS terminal 1 may wish to stenographically embed a digital water mark in the image so
20 that the copyright holder, i.e. in this case the user of MMS terminal 1, can be identified. For further details regarding the embedding of watermarks, see EP 0 862 318 A2.

The response of step 5. may include information regarding the
25 size or quality of image the user of MMS terminal 2 is allowed to print. For example, full reproduction of an art work may not be allowed. As an alternative or additional feature, cryptographic information may be passed to allow subsequent decryption and printing by the user of the MMS
30 terminal 2. Such a feature enhances the security against unallowed copying or reproduction of an image by third parties, or by the user of MMS terminal 2, e.g. when trying to print an image exceeding the printing rights granted to the user of MMS terminal 2.

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The print image request sent in step 7. may be used to
perform a printer discovery and/or indicate a print user
profile. The request sent in step 7. may contain specific
routing/addressing information indicating which printer
5   should print the image. As an example, the image may be
further transferred, e.g. via e-mail, to a print server on
the user's corporate LAN (local area network). This print
server may provide a special print service. In such a case,
the request message of step 7. preferably contains additional
10   information such as the address of the machine to transfer
the image to, and the alphanumeric name or address of the
printer.

In case the user of MMS terminal 2 does not wish, or is
15   unable to, directly indicate the printer to be used, the
print service preferably uses a default printer from which
the printed image or images is/are then to be collected. For
example, a command "print to:" may be left blank in the
message of step 7. which means the use of the default
20   printer.

When an external print service is used, additional
information is preferably carried inside the message in a
secure way, e.g. in encrypted manner, for example the user's
25   name, address, print quantity, output size, payment method,
etc.

Figure 3 shows a further embodiment of a network and system
in accordance with the invention. Here again, a case is
30   assumed in which MMS terminal 1 (terminal A) sends a MMS
message including picture or image data to MMS terminal 2
(terminal B). In the case of Figure 3, the MMS message sent
from MMS terminal 1 contains, in addition to the message
content section representing the image or images to be sent
35   to MMS terminal 2, a print-related information section which

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includes or represents print authentication data. This print
authentication information defines the conditions for
granting access and the print rights for eventually printing
the image, and is included by the originating terminal 1 into

5   the message sent to server 4, preferably into the header of
the message.

When the recipient terminal 2 requests one or more hardcopies
(prints) of the transmitted image, no permission request and

10   response messages are to exchanged because permission (and
conditions, if any) to print is already defined during the
initial delivery of the image from the originating terminal 1
to the server 4. Hence, steps 3. to 6. of Figure 2 can be
omitted leading to a reduction of the signaling and traffic

15   load of the network components handling such messages. Steps
3. to 8. of Figure 3 essentially correspond to steps 7. to
12. of Figure 2. In step 5. of Figure 3, the response may
include additional print job information signaling the
printer or printing service used for printing the image

20   (informing the user where to collect the print), charge
information for printing charges, and the like.

Such inclusion of print authentication information into the
MMS message offers an easy access determination to works such

25   as copyright-protected works, e.g. images. The copyright
owner can easily define the copy protection of the image and
may either give permission to print the image, or mark it as
view-only, i.e. not printable, etc.

30   In step 1. of Figure 3, the message sent from MMS terminal A
to the MMS server 4 includes the print authentication
information as embedded information. The print authentication
information defines print parameters relating to restrictions
e.g. which persons are allowed to print the image.

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The print authentication information, and/or the dialogue performed according to steps 3. to 6. of Figure 2 which relates to "permission to print image" can be extended so as to include transfer of charging information. In this case,

5   the print authentication information, or response, issued from the originating terminal 1 (assumed to be handled by the copyright holder) will indicate the costs charged for printing. If the recipient terminal 2 (user) requests to print the image, the user of terminal 2 will be billed based

10   on the charge information set by the user of terminal 1.

The transferring of charging information can be reduced to a "print profile" or "print charging profile" for each user, in particular each recipient user. In such a case, the MMS

15   server 4 preferably comprises a set of tariff clauses which are used to inform the recipient user about the charges. This relieves the originating user of terminal 1 from specifically setting a desired monetary unit amount. Such a strategy may be well compatible with current charging gateways of networks

20   such as GSM networks.

Figure 4 shows another embodiment involving only one MMS terminal 1, the MMS server 4 and a printing service 5. In the case shown in Figure 4, the terminal 1 directly requests the

25   printer service 5 to print the image. In step 1., the MMS terminal 1 performs an image upload to the MMS server 4 by sending an MMS message which includes the image data and print-related information which here is a print request header. This print request header contains parameters related

30   to the printing, which parameters are embedded in the image upload. The MMS server 4 confirms receipt of the message of step 1. by sending an image upload response in step 2. Further, in step 3. the MMS server 4 sends the MMS message, i.e. the image or picture, to the printing service 5

35   indicated by the user in the print request header. Any

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suitable format such as "Digital Print Order Format" may be
used by the MMS terminal 1 or MMS server 4 to mark each image
to be printed. The system may also use a proprietary format
for marking the images to be printed.

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According to Figure 4, the print parameters are embedded in
the initial image upload to the MMS server 4, as performed in
step 1. Therefore, no other additional message is to be sent
from MMS terminal 1 for ensuring a correct print.

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In step 3., the MMS server 4 sends the image contents to the
printing service 5 and requests print of the images in the
appropriate format. In particular in a case where several
images are contained in the image upload message of step 1.,
15 the order of printing thereof may be specifically defined.
Alternatively, the images may be printed in the order as
received. The printing service 5 sends a print order response
in step 4. confirming the print request. Finally, the MMS
server 4 sends a print response, in step 5., to MMS terminal
20 1 informing the latter on the performed print.

Figure 5 shows details of the structure of an embodiment of
an MMS message which may be sent in steps 1. of Figures 2 to
4. The MMS message contains a print-related information
25 section which here is represented by a print request header
10, a message content section which here is the image data
section 11 representing the picture to be sent to another MMS
terminal and/or to a printer or printing service. Moreover,
the MMS message contains an end section 12 representing the
30 end of message.

Figure 6 shows further details of the print request header 10
of Figure 5. The print request header 10 comprises an address
field 10A representing the address of the sender (e.g. MMS
35 terminal 1), a further address field 10B representing the

address of the recipient (e.g. MMS terminal 2), and a print
field 10C containing the print-related information. As shown
in Figure 6, the print field 10C may indicate the printing
conditions such as "enable" (printing is permitted without

5   restrictions); or "disable" (printing is not allowed); or
"restricted" (printing is permitted on a restricted basis
only or only after performing printing permission steps with
the originating terminal 1 or the MMS server 4.

10   The originating user may give explicit permission for
printing all pictures sent to an MMS server, or he can mark
any individual image sent as being "OK to print", or
containing "restrictions for print". A negotiation between
two users (parties) of the MMS terminals may be performed,

15   including designation of the method of output. The print
service to be used may be specified by the user of the
originating or receiving terminal. Such information is
preferably relayed to the MMS server, and e.g. charge
information is returned to a user (subscriber).

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The print field shown in Figure 6 may be provided as a
specific extension of the message such as a MMS message. For
instance, the "Send Request" table specified in "MMS Message
Encapsulation Draft" of "WAP FORUM" may be extended to

25   include the following fields:
"Print field:" enable: originator indicates allowance of
                   printing so that recipient is free to use the
                   work for printing;

30   disable: originator states printing is
                   prohibited. Upon request, the originator may
                   state "printing is allowed" as attachment to a
                   response to a print request;

"restricted:" e.g. a counter may indicate how
many times the message may be printed, or
other protocol-specific rights may be
indicated.

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The print fields may additionally contain a field "format"
which may be or include a specific identifier which
identifies the print parameters which can be used. This field
can also contain or define a link to further messages which
10   may carry e.g. print information such as DPOF (Digital Print
Order Format) information.

An additional field "print to" may be provided for indicating
the address which defines the address of the printer or
15   service to perform the print.

The above example of a print field is suitable e.g. for WAP
MMS messages. Any other suitable language such as XML may
likewise be used to carry the necessary information such as
20   parameters.

E.g.
<DPDF>
        <NAME> an example of restricted content </NAME>
25   <PRINT> Rights = "Restricted/No" Reason </PRINT>
<DPDF>

Any suitable method such WAP message encapsulation can be
used (after appropriate extension to include appropriate
30   additional fields), and/or the fields/values may sent as a
message content, e.g. a user multipart message encoded in an
appropriate language such as XML.

Figure 7 shows a simplified example of exchange of messages
35   wherein terminal 1 (A) is an originating mobile equipment and

20

terminal 2 (B) is the terminating mobile equipment. The
destination address is included in the MMS header. The use
rights for the image/message are given in the PRINT field
(print-related information section). Here, "allowed" is

5   indicated. When terminal 2 intends to print the message, it
transfers it to a service 13 which performs the print and/or
processing of the image. After completion of the print, the
terminal 2 is sending a notification "Printed" to terminal 1.

10 The message sent from terminal 1 to terminal 2 does not need
to include a print destination. When the terminating mobile
terminal forwards the message to the printing service 13, the
print-destination will then be defined according to the
selection of terminal 2.

15

Figure 8 shows another case of printing wherein the print-
related information section of the first message sent from
terminal 1 to terminal 2 includes the indication "ASK",
meaning that permission for printing has to be requested

20 before actually being allowed to perform a print. When a
print is desired, terminal 2 sends a request to terminal 1
requesting print permission. When terminal 1 allows the
printing, it sends a response indicating "ALLOWED" to
terminal 2. Terminal 2 then sends the image to the print

25 service 13 or prints it directly, e.g. on a local printer
(e.g. via an infrared port, or e.g. Bluetooth).

Figure 9 shows a case in which the print-related requests and
responses are sent between service 13 and terminal 1. In step

30 1., the terminal 1 directly sends a message such as an image
to terminal 2. This message includes the indication "ASK".
Terminal 2 forwards this message to the printing service
(step 2) when desiring the image to be printed. The service
13 requests print permission directly from terminal 1 by

35 sending a respective request in step 3. Terminal 1 responds,

21

in step 4., to this printing request by sending e.g. the
information "printing allowed", step 4. The service 13 then
prints the message, if allowed, and sends a confirmation to
terminal 1 (step 5., PRINTED).

5

In such a case, the message sent from terminal 1 in step 1.
may include an indication "print-destination" defining the
print service 13 to be addressed by terminal 2 when desiring
to print the message.

10

In the following, some specific examples of information
sections of messages will be described. The words and/or
values used below are illustrative examples only.

15

DPDF General Format
MMS Header Fields & Values

20   (Where | means "or"; MO stands for originating terminal; and
MT means terminating terminal)

Between terminals: MO-MT, MT-MO:

25   PRINT: ALLOWED |
                         FORBIDDEN |
                         RESTRICTED <COPIES> |
                         ASK |
                         REQUEST <Originators Address> Message ID
30   NOTIFICATION <Message>

To Service:
PRINT-Destination: ADDRESS | SERVICE

Note: REQUEST is used with an ASK directive.

          ASK shall be used by the originating author.

          REQUEST shall be used by the recipient to ask for

5   printing permission.

          NOTIFICATION may optionally be sent to the

          originating author.

ALLOWED / FORBIDDEN may also carry a reason why they are

10   allowed or forbidden.

Printing Rights

Printing rights can be assigned WITH the message. Examples

15   below:

PRINT: RESTRICTED 5 - Allows 5 prints of the image before the

user terminal removes it.

20   PRINT: ALLOWED - Printing of the image/message is allowed at

any time.

PRINT: FORBIDDEN   - ALL Printing is forbidden. This means

VIEW ONLY.

25   If "PRINT: RESTRICTED 0" is used, this is the same as PRINT

FORBIDDEN.

PRINT: ASK   - Terminating Terminal (Destination) Must Send
                 PRINT: REQUEST

30

Printing rights can be assigned only AFTER destination

terminal/service has requested them.

          MO Sends Message with PRINT: ASK set.

23

                    MT Sends PRINT: REQUEST
              MO Sends Print rights, that is PRINT: ALLOWED
                                             PRINT: RESTRICTED
                                             PRINT: FORBIDDEN
5   etc.

Again the message content when sending any of the above
values can indicate the REASON why the printing is
allowed/restricted/forbidden.

10

PRINT-Destination: Address/Application

Example: address //server//printershare-name
15   Or IPV4 : PORT
             Or textual description of output device.

This is optionally carried in the MT case, however the
recipient user will nearly always specify where he/she wants
20 to print the messages.

In the MO case (with NO destination mobile) the PRINT-
Destination is likely to be the MMS Destination address and
is probably not needed here.

25

It can be used to further restrict output in the MO-MT case
where its content can indicate "Service Only" thus the user
is not allowed local output (laser printer) etc.

30 ·

XML / PRINT Directive used with control information carried
in XML Encoded message.

If the WAP Message Encapsulation Message protocol data units and fields are NOT used, then a PRINT directive or MIME type can be used to carry XML encoded data to achieve the same goal.

5

XML Coding example:

Use Case 1:

10
```
<PrintInstructions>
   <Permission printing="Allowed"/>
</PrintInstructions>
```

```
<PrintInstructions>
```
15
```
   <Permission printing="Restricted" copies="5">
      Copyright (C) 2000 Nokia Corporation
   </Permission>
</PrintInstructions>
```

20

Use Case 2:
```
<PrintInstructions>
   <Permission printing="Ask" Id="xxxxyyyy">
      Copyright (C) 2000 Nokia Corporation
```
25
```
   </Permission>
</PrintInstructions>
```

Use Case 3:
30
```
A = Originator
B = Terminator
S = PrintService

[A->B], [B->S]
```

```
<PrintInstructions>
  <PrintPermission printing="Ask">
    <ImageId>xxxx:yyyy</ImageId>
    <RightsHolder>+358401234567</RightsHolder>
    Copyright (C) 2000 Nokia Corporation
  </PrintPermission>
</PrintInstructions>


[S->A]
<PrintInstructions>
  <PrintPermission printing="Request" copies="5">
    <ImageId>xxxx:yyyy</ImageId>
    <RightsHolder>+358401234567</RightsHolder>
    Copyright (C) 2000 Nokia Corporation
  </PrintPermission>
</PrintInstructions>


[A->S]
<PrintInstructions>
  <PrintPermission printing="Allowed" copies="1>
    <ImageId>xxxx:yyyy</ImageId>
    <RightsHolder>+358401234567</RightsHolder>
    Copyright (C) 2000 Nokia Corporation
  </PrintPermission>
</PrintInstructions>
```

Although the invention has been described by mainly referring
to images transported as messages, the messages may also
contain another message contents such as pure text. The
invention is applicable to messages of any such type when it
is intended or requested to print such messages.

While the invention has been described with reference to
specific embodiments, the description is illustrative of the

invention and is not to be construed as limiting the
invention. Various modifications and applications may occur
to those skilled in the art without departing from the true
spirit and scope of the invention as defined by the appended
5   claims.

CLAIMS

5   1. Messaging Service system including at least one first
Messaging Service terminal and a control means being adapted
for communication with a printing means, the first Messaging
Service terminal being adapted to send a message to the
control means, the message containing a print-related
10   information section and a message content section
representing the message content, wherein the print-related
information section contains print-related information and
designates the delivery of the message content section to the
printing means or to a second Messaging Service terminal.
15

2. System according to claim 1 which is implemented as a
Multimedia Messaging Service system, wherein the first and/or
second Messaging Service terminal(s) is/are Multimedia
20   Messaging Service (MMS) terminal(s).

3. System according to claim 1 or 2, wherein the message
content section represents one or more images.
25

4. System according to claim 1, 2 or 3, wherein the print-
related information section is contained in a header of the
message.
30

5. System according to any one of the preceding claims,
wherein the print-related information contains authorization
information related to printing or copying rights for
35   printing or copying the message content, preferably the image

or images represented by the message content section, by the
second Messaging Service terminal.

5   6. System according to claim 5, wherein the authorization
     information indicates the permission or prohibition to print
     the message content by the second Messaging Service terminal.

10   7. System according to claim 5 or 6, wherein the
     authorization information indicates the maximum allowed
     number of printing the message content by the second
     Messaging Service terminal.

15
     8. System according to claim 5, 6 or 7, wherein the control
     means is adapted to store the authorization information and
     to check it for print permission when the second Messaging
     Service terminal sends a print request.
20

     9. System according to any one of the preceding claims,
     wherein the second Messaging Service terminal is adapted to
     send, when it desires to print a message content, preferably
25   an image received from the first Messaging Service terminal,
     a print request to the control means which is adapted to
     respond thereto by sending a request to the first terminal
     inquiring on the permission to print, and to decide on the
     print request based on the answer received from the first
30   terminal.

     10. System according to any one of the preceding claims,
     wherein the control means comprises a memory for storing the

29

message or message content received from the first terminal
and transmitted to the second terminal.

5   11. System according to anyone of the preceding claims,
     wherein the printing means is an external printing station.

     12. System according to anyone of the preceding claims,
10   wherein the message content represents one or more
     photographs.

     13. Method to be performed in a Messaging System, in
15   particular a Multimedia Messaging Service (MMS) system,
     including at least one first Messaging Service terminal and a
     control means being adapted for communication with a printing
     means, the first terminal sending a message to the control
     means, which message contains a print-related information
20   section and a message content section representing the
     message content, preferably one or more images, the print-
     related information section containing print-related
     information and designating the delivery of the message
     content to the printing means or to a second Messaging
25   Service terminal.

     14. Method according to claim 13, wherein the print-related
     information section is sent as a header of the message.
30

     15. Method according to claim 13 or 14, wherein the
     information section contains authorization information
     related to printing or copying rights for printing or copying
35   the image by the second terminal.

16. Method according to claim 15, wherein the authorization
information indicates the permission or prohibition to print

5   the image by the second terminal.

17. Method according to claim 15 or 16, wherein the
authorization information indicates the maximum allowed

10   number of printing the image by the second terminal.

18. Method according to claim 15, 16 or 17, wherein the
authorization information is stored in the control means, and

15   the stored authorization information is checked for print
permission when the second terminal sends a print request.

19. Method according to any one of claims 13 to 18, wherein

20   the second terminal sends, when it desires to print the
message content, such as an image, received from the first
terminal, a print request to the control means which responds
thereto by sending a request to the first terminal inquiring
on the print authorization, and by deciding on the print

25   request based on the answer received from the first terminal.

20. Method according to any one of claims 13 to 19, wherein
the control means stores a message or message content

30   received from the first terminal and transmitted to the
second terminal.

21. Method according to any one of claims 13 to 20, wherein

35   the image is printed on an external printing station.

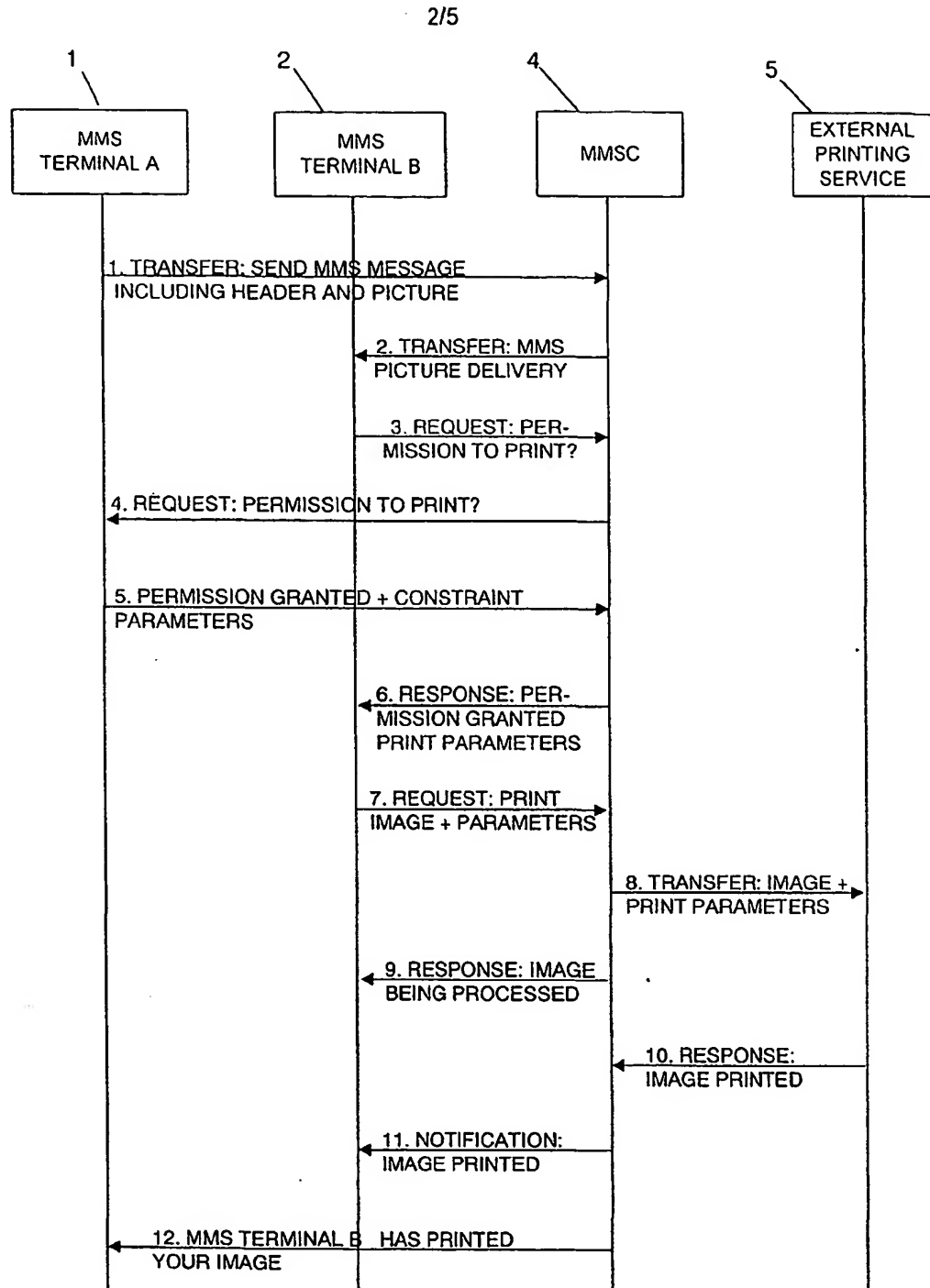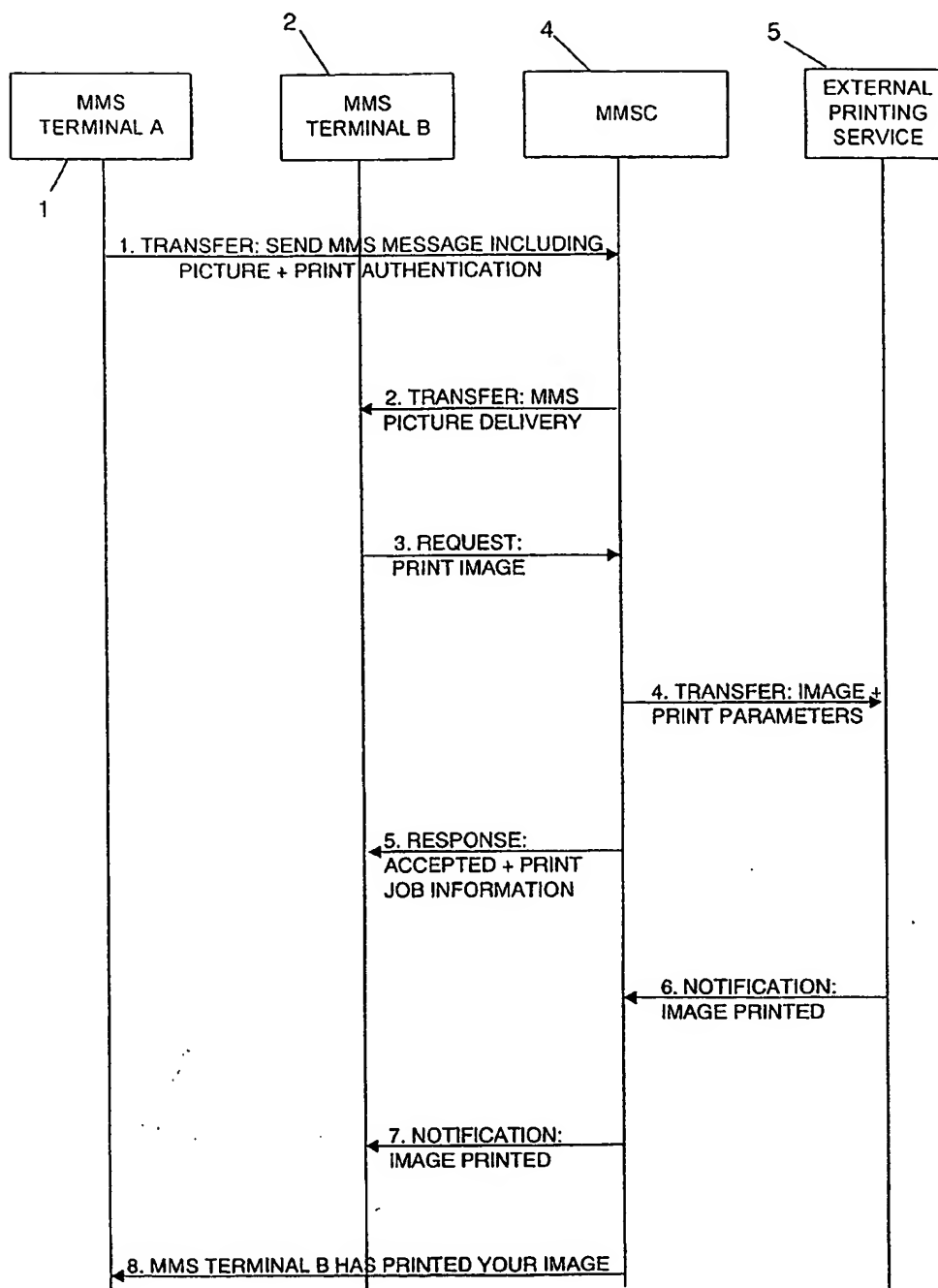22. Method according to anyone of claims 13 to 21, wherein the image is a photograph.
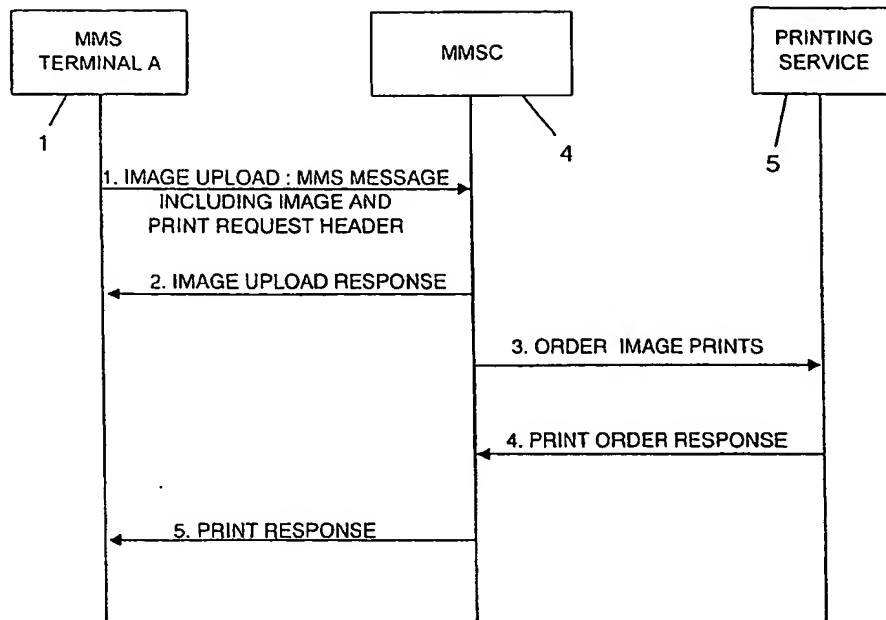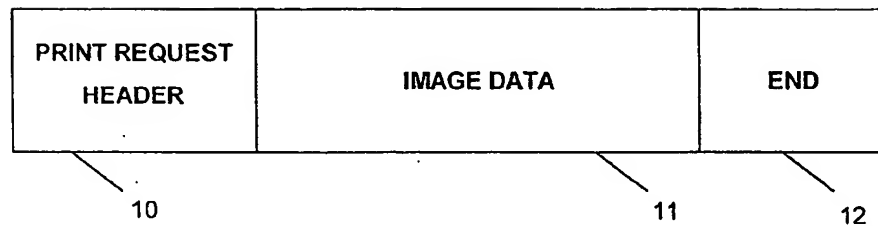
5
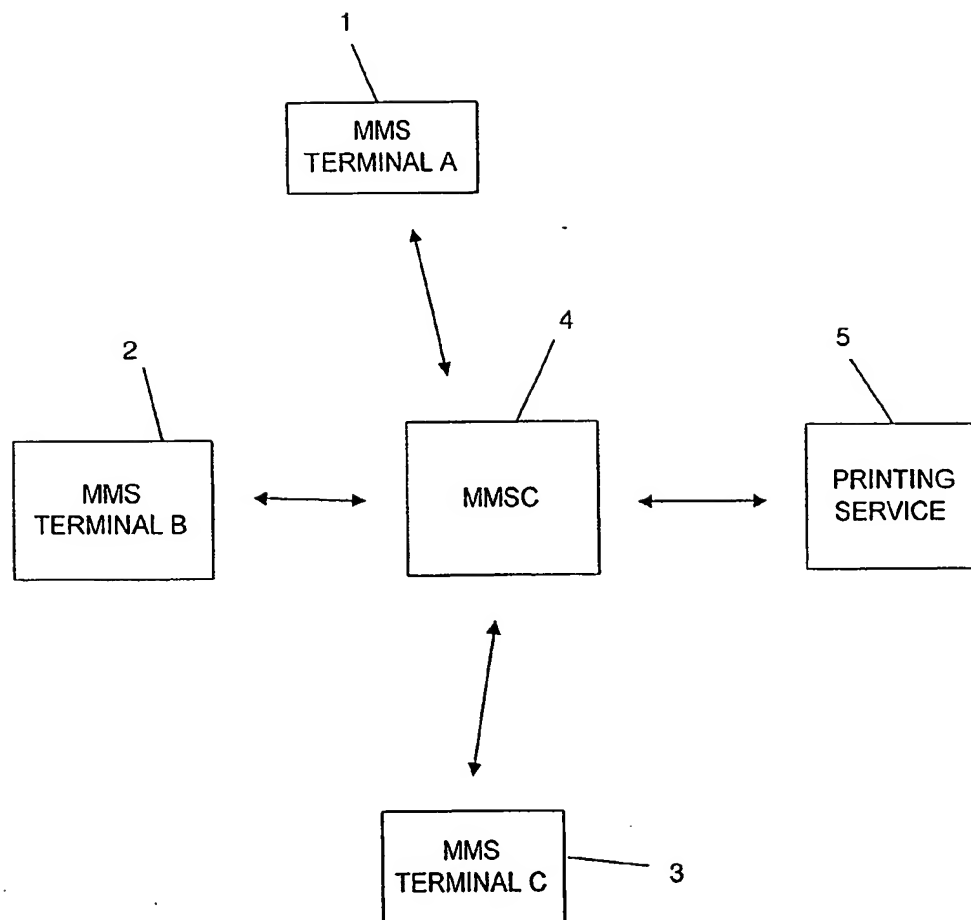
Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 5
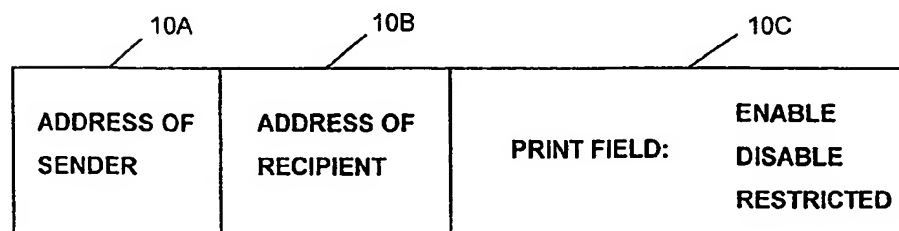
Fig. 6
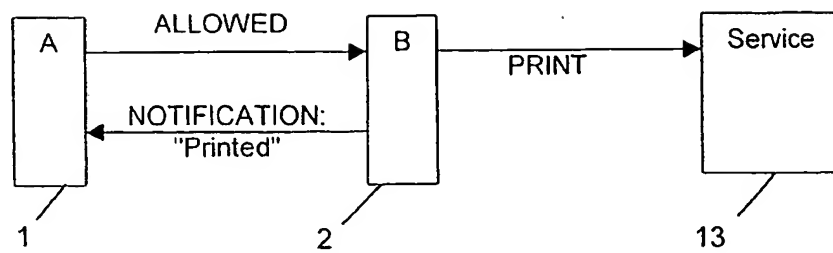
Fig. 7
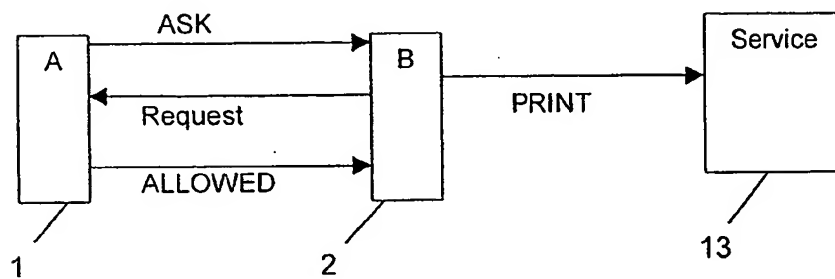
Fig. 8
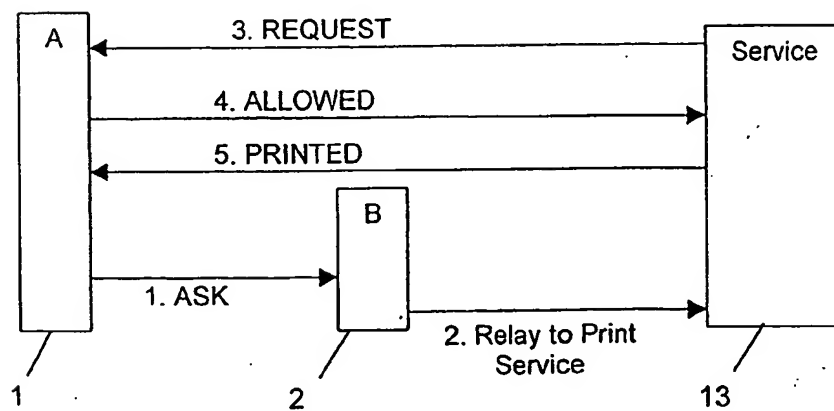
Fig. 9

INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7   H04N1/32   H04N1/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7   H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 671 277 A (IKENOUE YOSHIKAZU ET AL) 23 September 1997 (1997-09-23) column 17, line 29 -column 19, line 50 column 9, line 26 -column 1024; figures 13,32-34 ---	1,3,5,6, 8,10,11, 13,15, 16,18, 20,21
X	EP 0 830 010 A (EASTMAN KODAK CO) 18 March 1998 (1998-03-18) column 5, line 39 -column 8, line 55; figures 1-3 --- -/--	1,3, 10-13, 20-22

[X] Further documents are listed in the continuation of box C.   [X] Patent family members are listed in annex.

° Special categories of cited documents :

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'&' document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
5 February 2001	14/02/2001

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Waern, G |

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 989 733 A (MATSUSHITA ELECTRIC IND CO LTD). 29 March 2000 (2000-03-29) column 6, line 36 -column 9, line 55; figures 3,4	1,3,4, 10,11, 13,14, 20,21
X	EP 0 713 321 A (CANON KK) 22 May 1996 (1996-05-22) column 3, line 57 -column 4, line 52; figure 3	1-3, 9-11,13, 20,21
A	US 4 910 765 A (MATSUSE KENJI ET AL) 20 March 1990 (1990-03-20) column 6, line 46 -column 8, line 32; figures 1A,B	1,13
A	EP 0 860 985 A (CANON KK) 26 August 1998 (1998-08-26) column 3, line 57 -column 8, line 11; figure 4	1,13

INTERNATIONAL SEARCH REPORT

Information on patent family members

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
US 5671277	A	23-09-1997	JP	6020027 A	28-01-1994
			JP	6022131 A	28-01-1994
			JP	6022119 A	28-01-1994
			JP	6020122 A	28-01-1994
			JP	6022062 A	28-01-1994
			US	5987127 A	16-11-1999
EP 0830010	A	18-03-1998	US	5926288 A	20-07-1999
			AU	3755797 A	19-03-1998
			JP	10150519 A	02-06-1998
EP 0989733	A	29-03-2000	EP	0801492 A	15-10-1997
			EP	0989731 A	29-03-2000
			EP	0989732 A	29-03-2000
			EP	0984613 A	08-03-2000
EP 0713321	A	22-05-1996	JP	8149234 A	07-06-1996
US 4910765	A	20-03-1990	JP	62256548 A	09-11-1987
			JP	2531638 B	04-09-1996
			JP	63064446 A	22-03-1988
EP 0860985	A	26-08-1998	JP	10233860 A	02-09-1998
			CN	1192096 A	02-09-1998
			US	6101526 A	08-08-2000